

On Usability in Requirements Trace Visualizations

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Traceability

Definition (Traceability)

Ability to follow the life (of a requirement) backwards to its sources and forwards to its products.

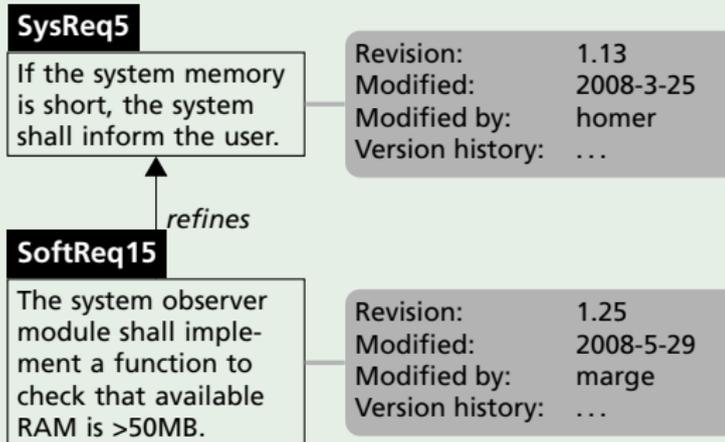
Example

Traceability

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Ability to follow the life (of a requirement) backwards to its sources and forwards to its products.

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Example

SysReq5

If the system memory is short, the system shall inform the user.



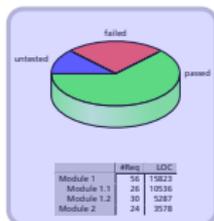
SoftReq15

The system observer module shall implement a function to check that available RAM is >50MB.

Revision: 1.13
Modified: 2008-3-25
Modified by: homer
Version history: ...

Revision: 1.25
Modified: 2008-5-29
Modified by: marge
Version history: ...

Visualization

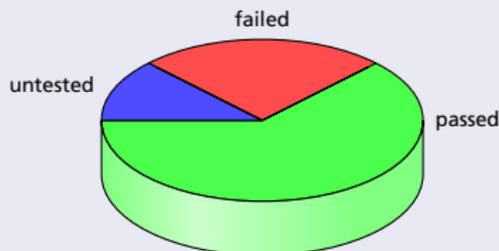


	Req1	Req2	Req3
Class1	■	■	■
Class2	■	■	■
Class3	■	■	■
Class4	■	■	■

id	content	traceability links
Req 1	The system shall...	<ul style="list-style-type: none"> ▶ Req2 ▶ Req3 ▶ Class1
Req 2	The system shall...	<ul style="list-style-type: none"> ▶ Req3 ▶ Req1 ▶ Req3
Req 3	The system shall...	<ul style="list-style-type: none"> ▶ Req2 ▶ Req1 ▶ Req2



Charts and Tables



	#Req	LOC
Module 1	56	15823
Module 1.1	26	10536
Module 1.2	30	5287
Module 2	24	3578

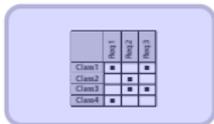
Properties

- management summary
- special purpose
- static
- high-level view

Visualization



Module	#Req	LDC
Module 1	56	15823
Module 1.1	26	10536
Module 1.2	30	5287
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Req 3	The system shall...	<ul style="list-style-type: none"> Req2 Req1 Req2



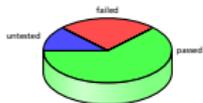
Traceability Matrix

	Req1	Req2	Req3
Class1	■		■
Class2		■	
Class3		■	■
Class4	■		

Properties

- shows links between two sets of artifacts
- static overview, no content
- can become quite large

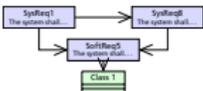
Visualization



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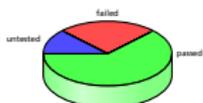
Cross-References

id	content	traceability links
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Properties

- shows links from/to one artifact
- along with content
- does not show peer content

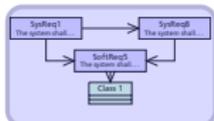
Visualization



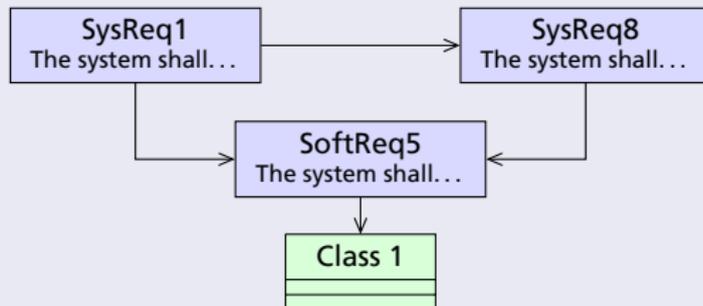
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Req 3	The system shall...	<ul style="list-style-type: none"> ▶ Req1 ▶ Req2 ■ Class3



Traceability Network/Graph



Properties

- flexible – can show both content and links
- good for navigating and browsing
- problematic: complexity and layout

Usability

User roles

- reviewer
- maintainer
- ...



Tasks

- find inconsistencies
- understand system
- ...



Data access: driven by user role and task

- report
- search
- browse

Problem: visualizations try to be universal

- They are not targeted at users and tasks.
- They do not provide guidance.

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Conclusion

Statement:

More usable visualizations → More benefit of traceability.

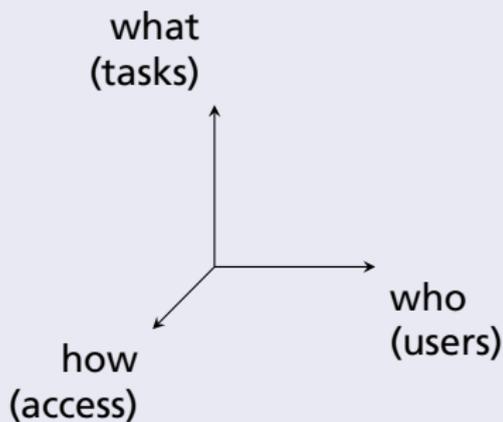
In the paper you'll find:

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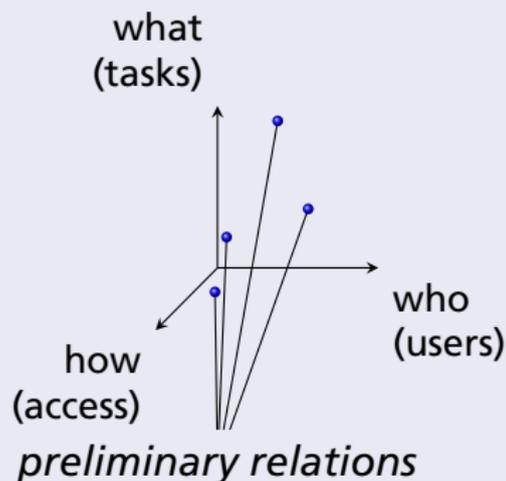


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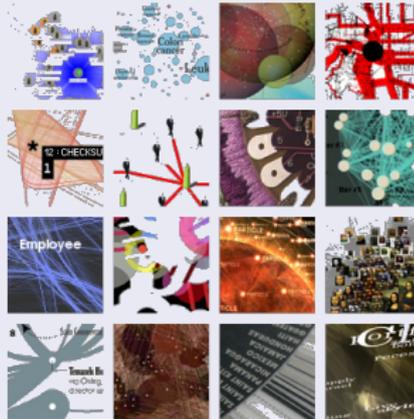
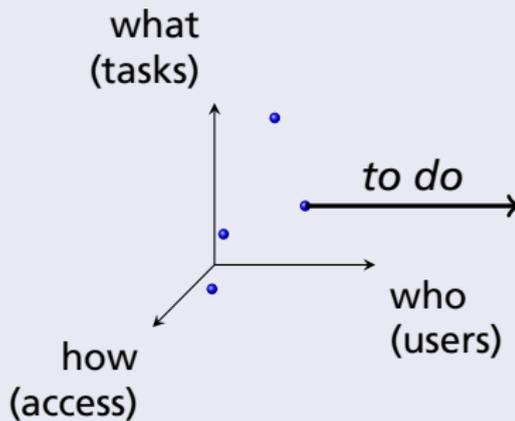


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[[http://www.visua\[complexity\].com](http://www.visua[complexity].com)]